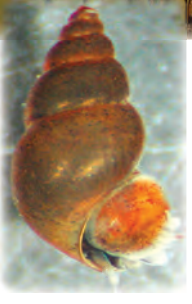
Field Identification Guide for Aquatic Nuisance Species



Introduction to ANS

Aquatic nuisance species (ANS) are a real and serious threat to our aquatic recreation. We only have to look at other states to understand the problems from foreign plants, exotic fish or mussels. Many ANS problems resulted from waiting until infestations were brought into and established in new areas. It is prevention efforts that will keep aquatic resources producing the lifestyle we want.

If North Dakota's waters become infested with any potentially serious invasive ANS it means lost dollars and lost natural resources.

It means large dollars and extensive manpower trying to prevent the spread of a preventable problem.

ANS has already cost North Dakota, its anglers, boating enthusiasts and citizens hundreds of thousands of dollars – a profound amount of money even though the state doesn't have major infestations. Nationwide it could cost billions if we don't take extra steps to prevent the movement of ANS to new areas. ANS impacts our fisheries, our power plants, our water intakes and water supplies and our future.

Prevention is the key. There are points at the

Continued on next page

Introduction to ANS

back of this book that describe the North Dakota law and steps that can be taken to prevent the spread of ANS. It's important to take a few minutes to inspect your boat and all your equipment, such as lifejackets, ropes, bumper, trailer hitch, wiring or anything that comes in contact with water. Remove visible vegetation, mud, and dirt. Some ANS hitchhikers, while inconspicuous to the eye, lurk in mud, dirt, sand and on plants.

Use this handy identification booklet to determine if a problem exists. More information can be found at http://www.gf.nd.gov/fishing/ans.html or by contacting the North Dakota Game & Fish Department at 701-328-6300 or at ndgf@nd.gov.

Let's work together to keep ANS out of our lakes and rivers.

This guide was developed for your use by:
Friends of Lake Sakakawea

In cooperation with:
ND Sportfishing Congress
Voices of Lake Oahe
Devils Lake Chamber of Commerce

Guide Index

Eurasian Water Milfoil

Myriophyllum spicatum

IS: a submerged, rooted, aquatic plant; prefers to grow on soft bottoms; found in water up to 20 feet deep; actively growing in the fall and winter

DOES: grows into dense mats on surface; thick enough to interfere with fishing, hunting, and boating; out-competes native plants, reduces fish food items and macroinvertebrates

MOVED AS or BY: small fragments of vegetation in/on boats/trailers/motors, PWC, fishing and hunting gear, and recreational equipment; plant fragments will grow into new plants

ID Keys: leaves are feather like; in whorls around stem, and paired; leaves typically 12 to 21 pairs per stem; leaves collapse when out of water; growing bud is light pink in color

MISTAKEN FOR: Northern water milfoil will have 5 to 10 pairs of leaflets per stem

Photos Courtesy of North Dakota Game and Fish

Curlyleaf Pondweed

Potamogeton crispus

IS: a rooted, submerged aquatic plant; prefers to grow on soft bottoms; grows to 30 foot depths; sprouts in the fall and is actively growing under the ice

DOES: forms thick mats near the surface; causes problems for fishing and boating; out-competes native plants; dies back in late summer after forming seed pods (turions); die-off can induce localized summer fishkills and nutrient loads

MOVED AS or BY : plant fragments and seeds; moved in or on boats and trailers, hunting gear, and recreational equipment

ID KEY: leaves are alternate, oblong (almost linear), and have finely serrated/toothed edges which are curly or undulating; leaves attach directly to the stem

MISTAKEN FOR: clasping-leaf pondweed whose leaves lack teeth, and are more curled, leaf bases clasping the stem

Photo Courtesy of Patricia Stockdill

Zebra Mussel

Dreissena polymorpha

Quagga Mussels

Dreissena bugensis

IS: both are small bivalves, less than 1.5 inches in length

DOES: attaches to and grows on firm/hard substrates; avoids light, found in dark spaces between rocks; clogs water intakes and cooling towers of electrical generation plants; filter feeding removes organic materials, zooplankton, and other food items used by small fish; modifies/degrades bottom habitats; reduces native and desirable fish populations; has die-offs which causes human health issues; can increase severity of blue-green alga blooms

MOVED AS or BY: adults or juveniles attach to equipment or boats; small juveniles and veligers (free-swimming stages) can be found in water in the livewell(s) or the bilge; moved in bait buckets or with imported live aquatic fishbait; individuals can live for extended periods of time out-of-water if weather is cool; can live in damp pet fur for some period of time

ID KEY: these mussels are up to 1.5 inches in length; both have byssal threads (beards) which attach to hard items; zebra mussels are flat on the hinge side and shells

are D-shaped; quagga mussels do not have a pronounced flat side; coloration of both is alternating strips of black to light brown on a whitish or cream shell

MISTAKEN FOR: fingernail clams or small native clams, these do not have the D shape or byssal threads

Dreissena bugensis
Actual size is 15 mm

Dreissena polymorpha
Actual size is 20 mm

Photo Courtesy of U.S. Geological Survey

Asian Clam

Corbicula fluminea

IS: small, freshwater clam

DOES: grows on firm/hard substrates; avoids light, found in dark spaces such as intakes to water plants or pumping stations or water cooling towers at electrical generation plants; filter feeds on organic materials, zooplankton, and other food items used by small fish; reduces native and desirable fish populations

MOVED AS or BY : adults or juveniles attach to equipment or boats; juveniles and veligers (free swimming stages) can be found in water in the livewell(s) or the bilge; can be moved with live aquatic fishbaits; individuals can live for an extended period of time out-of water if weather is cool; can be moved in pet's fur

ID KEY: are typically less than 1 inch, but some individuals may reach 2.5 inches in length; light brown to tan colored; having triangular and relatively thick, coarse growth rings; finely-serrated teeth on shell's interior

MISTAKEN FOR: native fingernail clams which are smaller, having thinner shells, and growth rings are less pronounced

Photo Courtesy of www.biology.duke.edu

Spiny Water Flea

Bythotrephes longimanus

Fishhook Water Flea

Cercopagis pengoi

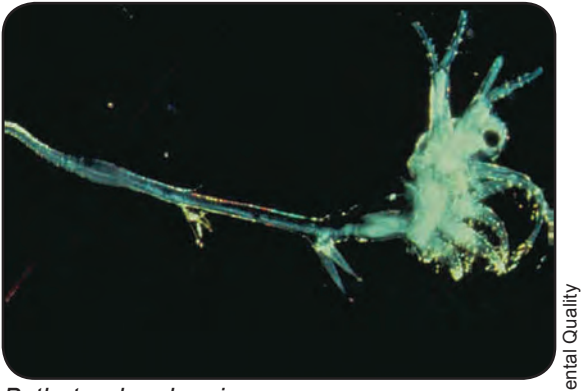
IS: large swimming zooplankton which have a long barbed tail

DOES: eats other zooplankton, reduces food available to small gamefish; spines mean it is not consumed by small fish

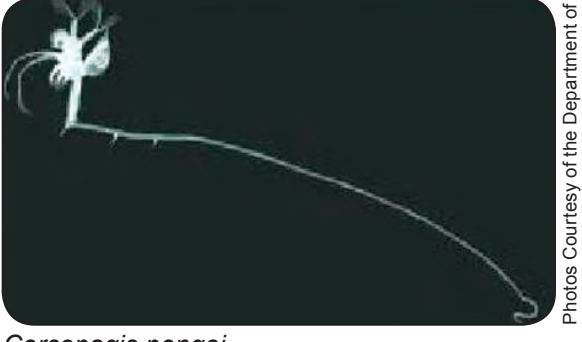
MOVED AS or BY : adults or eggs can be moved in livewell(s) or bilge water; eggs are very hardy, can be moved when dry

ID KEY: observed as small gelatinous globs on fishing line or gear, collects on decoy lines or hunting gear in the water or other equipment; adults can be 3/8 to 5/8 inch in length, the tail is over half their body; 1 to 3 pairs of barbs along the length of their tails

MISTAKEN FOR: native zooplankton, but these have tails less than 25% of their body length



Bythotrephes longimanus



Cercopagis pengoi

Photos Courtesy of the Department of Environmental Quality

New Zealand Mud Snail

Potamopyrgus antipodarum

IS: a very small snail; all female populations; asexual reproduction using live birth of daughters (population is all females); capable of bearing young at birth

DOES: in large numbers, up to 10,000 to 50,000 individuals per square foot; eats plant and animal material, algae, bacteria, etc.; outcompetes other native bottom-dwellers for food; habitat modification and less food for desirable fish species; shells protect these snails from being digested by fish

MOVED AS or BY: attach or trapped in fishing gear such as waders or other damp equipment; in livewells or bilge water

ID KEY: very small, adults are less than 1/8-inch in length; light to dark brown in color; having an elongated shell with 4 to 6 whorls; has an operculum (cover for the shell's opening)

MISTAKEN FOR: many other similar snails; specimens should be taken to an expert for identification

Photo Courtesy of the Department of Environmental Quality

Rusty Crayfish

Oronectes rusticus

IS: crayfish, native to the Ohio River

DOES: feeds on vegetation and fish eggs; destroys habitats; hybridizes with native crayfish

MOVED AS or BY: release of unwanted baits or live specimens used in schools

ID KEY: rusty-colored spot on sides of carapace (outer shell); large claws which have black bands at the tips; very aggressive

MISTAKEN FOR: common crayfish

Photo Courtesy of the Department of Natural Resources

Round Goby

Neogobius melanostomus

Tubenose Goby

Proterorhinus marmoratus

IS: small bottom-dwelling fishes; are aggressive; likes to hide in bottom cobble, rubble, and debris, dislikes the light

DOES: out compete desirable fish for food; displace native or desirable fish species by eating spawn or fry

TRANSMISSION: spread in bait bucket transfers

ID KEY: have raised eyes; a large, single, fused scallop-shaped pelvic fin; a black spot on the dorsal fin; and mostly slate gray in color

MISTAKEN FOR: similar to native sculpin species lack scales, typically lack a black spot on the dorsal fin, and have separate pelvic fins that do not form a scallop or disk shape

Neogobius melanostomus

Proterorhinus marmoratus

Photos Courtesy of Environment Canada

Bighead Carp

Hypophthalmichthys nobilis

Silver Carp

Hypophthalmichthys molitrix

IS: large filter-feeding fish

DOES: eats large amounts of phytoplankton (single celled plants) and zooplankton (microscopic invertebrates), and small insects; out-competes young-of-the-year and other small fish for food; uses same foods as paddlefish; silver carp leap from the water and have injured anglers and boaters

MOVED AS or BY: moved as baitfish such as gizzard shad or threadfin shad; bighead carp have been sold in live fish markets

ID KEY: both species grow to a large size – 60 pounds for silver carp and 110 pounds for bighead carp; have low-set eyes which are located below the mouth; mouth is upturned without barbells (feelers at the corner of the jaw; heads lack scales, a smooth keel (ridge along their belly); body scales are small; lateral line is visible; silver carp gillrakers are sponge like; bighead carp have numerous gill-rakers

MISTAKEN FOR: gizzard shad which have a dark spot on the gill covers and have jagged belly keels; small bigmouth buffalo which have a long sickle-shaped dorsal fin; eyes of golden shiners are not under slung and as large as those of the Asian carp

Photos Courtesy of U.S. Fish and Wildlife Service

Hypophthalmichthys nobilis, left
Hypophthalmichthys molitrix, right

Black Carp

Mylopharyngodon piceus

Grass Carp

Ctenopharyngodon idella

IS: large fish of 100 pounds or better; can grow to 5 feet in length; Black carp eats snails and small mussels; Grass carp eat aquatic vegetation

DOES: black carp eats mussels whose populations are being reduced by pollution and habitat loss; grass carp eat vegetation which modifies habitats and sportfish populations rapidly decline, ineffective digestion spews massive amounts of nutrients into waterbodies leading to algae blooms

MOVED AS or BY: spread as baitfish which is moved to and released in new areas; grass carp are released in areas to control aquatic vegetation, but often escape

ID KEY: both species have small mouths without barbells; large scales; and no belly keels (ridges)

MISTAKEN FOR: shiners, or minnows, but lack keels, natives are not nearly as long and as rounded; lack sickle-shaped dorsal fins found on bigmouth buffalo

Mylopharyngodon piceus

Ctenopharyngodon idella

Photos Courtesy of U.S. Fish and Wildlife Service

Rudd

Scardinus erythropthalmus

IS: medium sized; having a flattened, deep body

DOES: consumes small invertebrates and zooplankton; competes with native and desirable fishes; habitat degradation by vegetation destruction;

MOVED AS or BY: moved as a baitfish

ID KEY: laterally compressed fish; grows to 18 inches in length; has bright yellow or orange fins and silver or gold body color; sharp, scale covered keel between the pelvic fin and anal fin

MISTAKEN FOR: golden shiner's pharyngeal teeth in a single row - 0,4/5-5/4,0, while rudd have two rows - 3,5-5,3

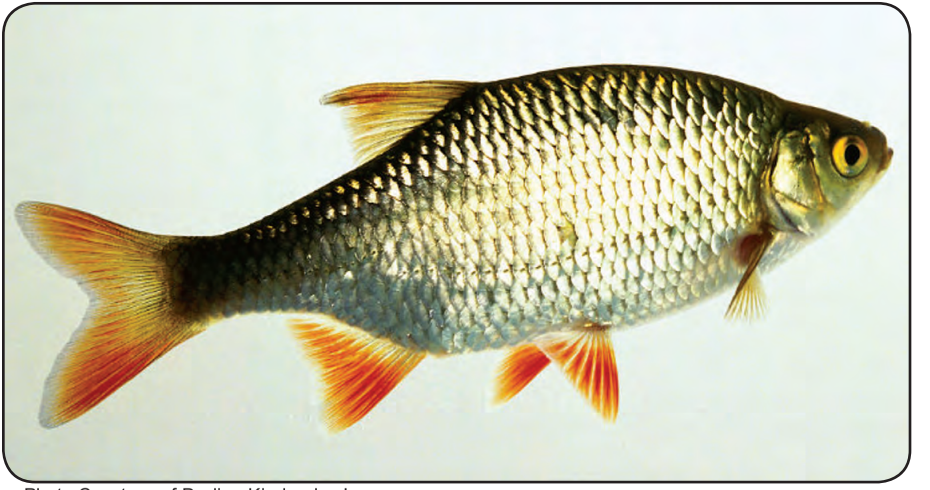


Photo Courtesy of Dorling Kindersley Images

Eurasian Ruffe

Gymnocephalus cernuus

IS: similar in looks to small perch or walleye

DOES: out-competes native fishes for food and space; has rapid population growth

MOVED AS or BY: moved as baitfish or in “bucket stocking” of new waters

ID KEY: no more than 6-inches in length; no gap between the front and back dorsal fins; has rows of dark spots between spines on the dorsal fin; feels slimy when handled

MISTAKEN FOR: perch, small sauger or walleye

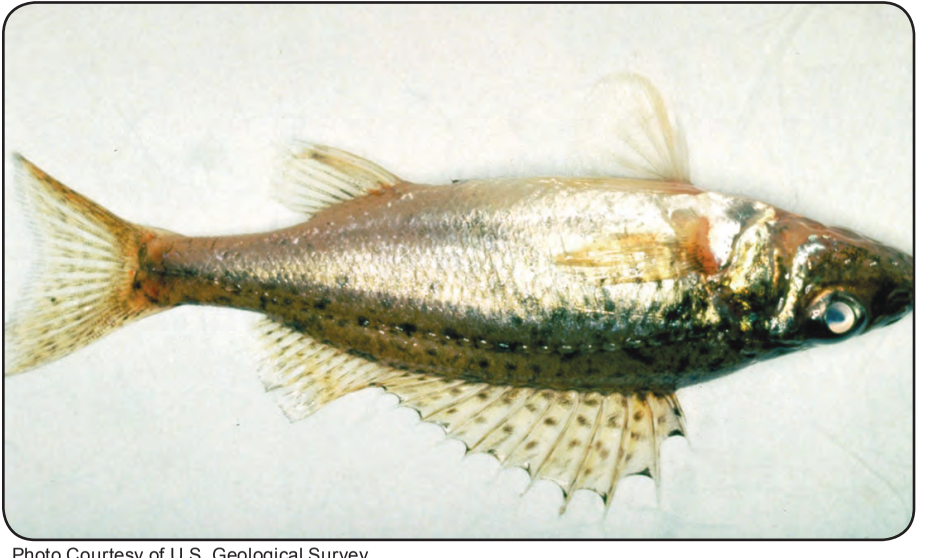


Photo Courtesy of U.S. Geological Survey

Common Carp

Cyprinus carpio

IS: robust member of the minnow family; grows to 50 pounds or more; tolerant of various water conditions

DOES: an omnivore; out-competes native fishes for food and space for juvenile gamefish; while feeding on invertebrates, roots up aquatic vegetation, increases water turbidity; destroys aquatic habitats for fish and waterfowl; has rapid population growth

MOVED AS or BY: moved as baitfish; moves upstream in spring to explore new spawning regions

ID KEY: long dorsal fin; deep bodied with large scales; has two pair of barbells (feelers) at the corner of their jaws; various color phases from black to silver

MISTAKEN FOR: native shiners or minnows which are used as bait

Photo Courtesy of North Dakota Game and Fish

Snakehead

Channa and *Parachanna* spp.

IS: can breathe air and live for days out of water if the weather is cool and moist; tolerant of most water conditions and cold conditions; very aggressive, will attack people and pets during spawning season or guarding their young

DOES: extremely effective predators; eats just about anything they can catch – fish, snakes, turtles, birds, macro-invertebrates, and other foods small enough for them to ingest; strong competitor with desirable food items

MOVED AS or BY: small individuals are found in the pet industry, released as unwanted pets; used as food, small fish are released to stock new areas

ID KEY: long heavy fish; long dorsal fin and anal fin; caudal fin is rounded; is brown with dark blotches and patterns; head is somewhat flattened; eyes positioned similar to that of a northern pike

MISTAKEN FOR: bowfin

Photo Courtesy of www.dnr.state.md.us

Follow these prevention rules

The carefree days of boat launching without regard to aquatic nuisance species (ANS) are gone. North Dakota, like many states, has regulations designed to prevent ANS introduction:

• Inspect and remove all aquatic vegetation from water vessels, including hunting boats, kayaks, and personal watercraft, trailers, and equipment.

• Remove all aquatic vegetation from bait buckets when leaving the water.

• Drain water from boats, bilges, live wells, and motors at the ramp site before leaving. Exceptions are live wells used for transporting fish and potable and sewage water, which must be disposed of properly.

• Someone coming into North Dakota cannot transport live aquatic bait or vegetation into the state and all water must be drained from the vessel.

• Don't dump bait or introduce any fish into North Dakota waterways.

• Except for legal, live baitfish, nongame fish such as

carp can't be transported away from the water body where they were taken. The easiest way to comply with North Dakota's regulations is to ICD – inspect, clean, and dry – according to ND Game and Fish Department.

Hitchhikers – aquatic nuisance species such as zebra mussels or Eurasian water milfoil –potentially lurk in many places. Take a few minutes to inspect and clean rods, reels, water-skis, ropes, oars, lifejackets, boating tubes and boards, anchors and anchor ropes, bumper, trailer hitch, wiring, safety chain, rollers, bunks, axles, frame crossmembers, lower unit, propeller, bait buckets, clothing, waders, diving equipment or anything else coming in contact with water. Some hitchhikers, while inconspicuous to the eye, lurk in mud, dirt, sand, and on plants. Other hitchhikers are invisible, so washing and disinfecting all equipment is important:

• Use a pressure washer with water 120 degrees or hotter. "But don't do it in the driveway so it goes down the storm sewer," Game & Fish says.

• Rinse with a solution of 20-1 ratio of water to bleach.

• Dogs who were in a waterway should be bathed with warm water and brushed.

• Dip hard-to-wash equipment in vinegar for 20 minutes or soak 24 hours table salt solution, using two-thirds of a cup of salt for five gallons of water.

It's the law

Chapter 30-03-06 Aquatic Nuisance Species Effective April 1, 2008

Upon leaving any water body or while in transit, all watercraft, watercraft motors, watercraft trailers, and recreational and commercial equipment used in fishing, hunting, and watercrafting or construction equipment shall be free of prohibited or regulated aquatic nuisance species, as defined in the state's aquatic nuisance species list. All equipment is subject to inspection by a duly appointed agent of the director.

30-03-06-02. Aquatic vegetation definition

Aquatic vegetation includes all obligate submergent species of aquatic plants.

30-03-06-03. Aquatic vegetation prohibited

No aquatic vegetation, or parts thereof, shall be in or on watercraft, watercraft motors, watercraft trailers, and recreational, commercial, or construction equipment when out of water. Watercraft and recreational, commercial, or construction equipment on lifts suspended above the water from which they originated are excluded. Time out of the water needed to clean aquatic vegetation from the watercraft, watercraft motors, watercraft trailers, and recreational, commercial, or construction equipment at the immediate water access area (e.g., boat ramp) is allowed.

All built-in structures to boats, including livewells and bait compartments and containers used to transport legal live bait, must be free of aquatic vegetation.

30-03-06-04. Aquatic vegetation transport

No person may transport any aquatic vegetation to or from any waters of the state without approval from the director. No person may transport any aquatic vegetation into the state.

30-03-06-05. Water prohibited

All water must be drained from watercraft and recreational, commercial, and construction equipment bilges and confined spaces when out of water and upon entering the state. Water used for transportation of fish in watercraft livewells and bait buckets within the state is excluded. Potable and sewage water is excluded.

30-03-06-06. Inspections

Operators and haulers of all watercraft and recreational, commercial, or construction equipment must inspect their equipment for aquatic nuisance species when removed from waters of the state or upon entering the state. If present, the aquatic nuisance species must be physically removed immediately.

30-03-06-07. Penalty

Any person violating a provision of this chapter for which a penalty is not specifically provided is guilty of a noncriminal offense and shall pay a $100 fee.

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